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As shown in FIG. 20(a), it is assumed that a temperature estimated value T_b is estimated for each peripheral block, as in FIG. 15(a). As shown in FIG. 20(b), a peripheral block temperature difference estimated value T_{bd} for each peripheral block is then found, as in FIG. 15(b). Finally, a peripheral block at the lower left corner having a maximum peripheral block temperature difference estimated value T_{bd} (13 in the example shown in FIG. 20) out of peripheral block temperature difference estimated values T_{bd} shown in FIG. 20(b) is selected, and 13 which is the peripheral block temperature difference estimated value T_{bd} for the peripheral block is taken as the maximum peripheral block temperature difference estimated value T_{max} .

As a result, as shown in FIG. 20(C), the peripheral block temperature difference estimated values T_{bd} for all the peripheral blocks are replaced with the maximum peripheral block temperature difference estimated value T_{max} . A multiplication factor k is determined, as in FIG. 8, for each peripheral block using the maximum peripheral block temperature difference estimated value T_{max} , and the luminance of each of the peripheral blocks is controlled depending on the multiplication factor k .

A controller 3 uses the maximum peripheral block temperature difference estimated value T_{max} found in the above-mentioned manner, to output a brightness control signal LC to a brightness controller 2 such that the luminance is controlled for each peripheral block. The brightness controller 2 outputs to a display 1 an address driver driving control signal AD, a scan driver driving control signal CS, and a sustain driver driving control signal US for controlling luminance for each peripheral block depending on the brightness control signal LC. In the display 1, the luminance is controlled in response to each of the inputted driving control signals.

The present embodiment is the same as the second embodiment except that a temperature difference estimator 4B corresponds to a temperature estimation circuit and an operation circuit.

In the plasma display device configured as described above, the luminance control method for each of the above-mentioned embodiments can be used, thereby making it possible to obtain the same effect.

In the present embodiment, the luminance is controlled using the maximum peripheral block temperature difference estimated value T_{max} representing the largest temperature difference in the peripheral blocks, thereby making it possible to more reliably prevent the PDP 11 from being damaged. Further, the luminance is controlled by one maximum peripheral block temperature difference estimated value, so that processing for controlling the luminance is simplified.

Description is now made of a plasma display device according to a fourth embodiment of the present invention. FIG. 21 is a block diagram showing the configuration of the plasma display device according to the fourth embodiment of the present invention.

The plasma display device shown in FIG. 21 is the same as the plasma display device shown in FIG. 1 except that a temperature measuring unit 6 is added. Accordingly, the same portions are assigned the same reference numerals and hence, the description thereof is not repeated.

As shown in FIG. 21, the temperature measuring unit 6 is connected to a panel periphery temperature setter 5, and directly measures the temperature of the panel outer periphery of a PDP 11 and outputs the measured temperature to the panel periphery temperature setter 5. The panel periphery

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temperature setter 5 sets a reference value T_o corresponding to the measured temperature and outputs the set reference value T_o to a temperature difference estimator 4. After that, the subsequent processing is performed, as in the first embodiment, so that luminance is controlled.

The present embodiment is the same as the first embodiment except that the panel periphery temperature setter 5 and the temperature measuring unit 6 correspond to a measurement circuit.

In the plasma display device configured as described above, the luminance control method in the first embodiment can be similarly used; thereby making it possible to obtain the same effect. When the temperature measuring unit 6 in the present embodiment is used for another embodiment, a luminance control method in another embodiment can be also similarly used, thereby making it possible to obtain the same effect.

In the present embodiment, the temperature of the panel outer periphery is directly measured, and the luminance can be controlled on the basis of the reference value T_o corresponding to the temperature. Even when the reference value T_o is changed due to the variation in outer air temperature, for example, therefore, the PDP 11 can be more reliably prevented from being damaged. The number of measuring points in the temperature measuring unit 6 may be one or plural in the panel outer periphery. When a plurality of points are measured, a reference value may be set for each of the measuring points, or a reference value may be set, for example, with respect to the average of the results of the measurement of the plurality of points.

Although in each of the above-mentioned embodiments, the video signal VS is multiplexed by the multiplication factor k included in the brightness control signal LC outputted from the controller 3 in the multiplication circuit 21 to control the luminance, the maximum luminance of an image displayed on the PDP 11 may be lowered by changing the multiplication circuit 21 into a limiting circuit for limiting the maximum luminance of the video signal, outputting an upper-limit value of the maximum luminance corresponding to the temperature difference estimated value from the controller 3, and limiting only luminance exceeding the upper-limit value of the maximum luminance by the limiting circuit.

What is claimed is:

1. A display device, comprising:

a display having a display screen that displays an image with a luminance corresponding to a video signal, and an outer peripheral portion adjacent to said display screen;

a temperature estimation device that estimates, from said video signal, a temperature value corresponding to a display screen temperature;

an operation device that determines a temperature difference estimate value in accordance with a reference value corresponding to a temperature of said outer peripheral portion and said estimated temperature value; and

a control device that lowers the luminance of the image as said temperature difference estimate value increases.

2. The display device of claim 1, wherein said temperature estimation device estimates said temperature value in accordance with the temperature of an outer periphery adjacent portion of said display screen adjacent to said peripheral portion.

3. The display device of claim 1, wherein said display comprises:

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a first board and a second board whose outer peripheries are joined to each other, a plurality of light emitting elements that form said display screen being interposed between said first board and said second board, and wherein said outer peripheral portion of said display includes a portion between said plurality of light emitting elements positioned in an outermost periphery of said display screen and a joint portion of said first board and said second board.

4. The display device of claim 1, wherein said temperature estimation device integrates data related to said luminance from said video signal and subtracts data corresponding to an amount of dissipated heat from said integrated data, said operation device determining said temperature difference estimate value by subtracting said reference value from said estimated temperature value.

5. The display device of claim 1, wherein said display screen displays the image on a gray scale, out of a plurality of gray scales, related to said video signal, and wherein said control device lowers the luminance of the image by a same ratio for each of said plurality of gray scales.

6. The display device of claim 1, wherein said reference value comprises a plurality of reference values that differ depending on a position of said outer peripheral portion of said display.

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7. The display device of claim 1, further comprising:

a measurement device that measures a temperature of said outer peripheral portion of said display, said measurement device outputting a reference value, corresponding to said measured temperature, to said operation device.

8. A method for controlling a luminance of a display, in which a display screen displays an image having a predetermined luminance corresponding to a video signal, an outer peripheral portion being adjacent to said display screen, the method comprising:

estimating a temperature value corresponding to a temperature of the display screen from the video signal;

estimating a temperature difference value using a reference value that corresponds to a temperature of the outer peripheral portion and the estimated temperature value; and

lowering the luminance of the image as the estimated temperature difference value increases.

9. A display device, comprising:

a display having a display screen that displays an image with a luminance corresponding to a video signal, and an outer peripheral portion adjacent to said display screen;

a temperature estimation device that estimates, from said video signal, a temperature value corresponding to a display screen temperature;

an operation device that determines a temperature difference estimate value in accordance with a reference value corresponding to a temperature of said outer peripheral portion and said estimated temperature value; and

a control device that controls the luminance of the image based on the temperature difference estimation value.